

The Cholera bacterium (*Vibrio cholerae*)

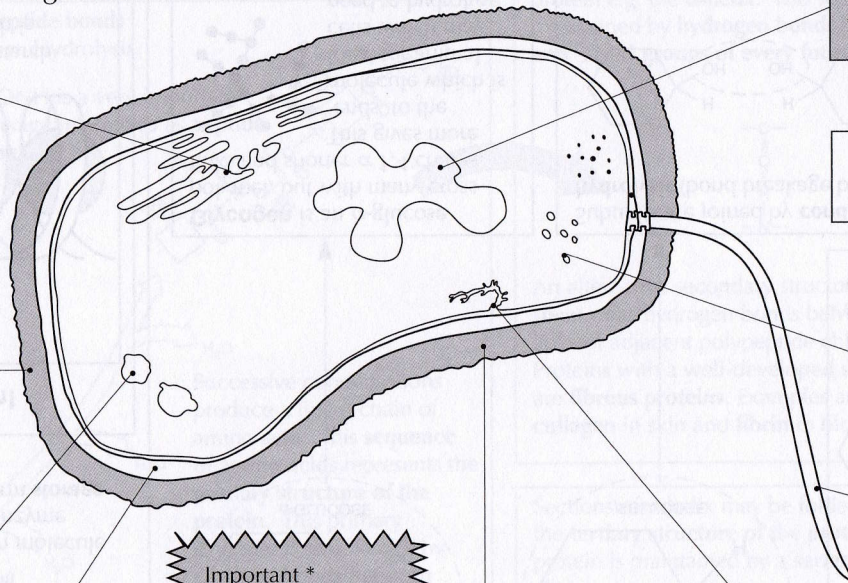
is a prokaryotic cell and so has no true organelles.

***Photosynthetic membranes** are surfaces for light-absorbing pigments, but there are no chloroplasts
N.B. Bacterial photosynthesis does not evolve oxygen.

Capsule is a gummy layer of mucilage which may join bacteria into colonies (e.g. *Bacillus anthracis*) or give protection (e.g. rough strain of *D. pneumoniae*).

***Plasmids** are short pieces of circular DNA which replicate independently of the cell genome. They have been widely exploited in recombinant DNA technology.

Cell wall has a rigid framework of **murein**, a polysaccharide cross-linked by peptide chains.



SCALE
0.1 μm

***Genetic material** is composed of a circle of double-stranded DNA **which is not enclosed within a nuclear membrane**. There are typically about 2000 genes, much less than the number found in a eukaryotic cell.

***Ribosomes** smaller than those in eukaryotes. They are scattered throughout the cytoplasm, not supported on an endoplasmic reticulum.

Plasmamembrane is a typical phospholipid bilayer.

Food stores are typically lipid globules or glycogen granules.

***Flagellum** is responsible for motility of many bacteria. It is much simpler than the flagellum of a eukaryotic cell, being composed of a single cylinder of protein subunits (flagellin). The flagellum does not 'beat' but instead rotates about a 'bearing' anchored in the cell wall to produce a corkscrew motion which drives the cell along.

Important * comparisons with eukaryotic cells.

Oral rehydration solutions (ORS)
These are solutions of ions and glucose. If sufficient is available they can reduce deaths by over 90%. Rice or other cereals in the solution are also very effective at reducing the problems of **dehydration**.

Cholera bacterium causes severe diarrhoea

- The bacterium releases a toxin.
- Toxin increases loss of Cl^- and water.
- Toxin blocks reuptake of Cl^- and water.

Infected person produces very watery faeces (= diarrhoea)

***Mesosomes** are infoldings of the plasma membrane on which the enzymes associated with respiration are located. A proton gradient generated across these membranes is used to drive the synthesis of ATP.

